

**UNIVERSITI TEKNOLOGI MARA**



**THE EFFICACY OF COMPUTED  
TOMOGRAPHY (CT) SCAN AND  
MAGNETIC RESONANCE IMAGING  
(MRI) IN DETECTING  
HEPATOCELLULAR CARCINOMA  
(HCC): RETROSPECTIVE STUDY**

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June 2015

## **AUTHOR'S DECLARATION**

I declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This dissertation has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations, Universiti Teknologi MARA, regulating the conduct of my study and research.

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Magnetic Resonance Imaging (MRI) in Detecting  
Hepatocellular Carcinoma (HCC): Retrospective Study

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## ABSTRACT

**Purpose:** The aim of this thesis was to determine the diagnostic accuracy as well as the sensitivity of CT scan and MRI in detecting hepatocellular carcinoma (HCC).

**Methodology:** This is a retrospective study to identify the sensitivity and specificity of CT scan and MRI in detecting HCC. The study was done at Diagnostic and Radiology Department, Selayang Hospital. The time frame for the sample data collection was taken from January 2013 until March 2015. 74 samples were selected based on the inclusion criteria of the study. The patient data selections were strictly the patients who underwent for both CT scan and MRI for detection of HCC. The reference of standard that was used to confirm the presence of the HCC included other interventional findings such as percutaneous biopsy, surgical resection and liver transplant.

**Result:** The results were used in Bayes' theorem to calculate the sensitivity, specificity, positive predictive value, negative predictive value, and diagnostic accuracy of CT scan and MRI in detecting HCC. Based on the Bayes' theorem, the sensitivity of CT scan and MRI is 81% and 94% respectively. The specificity of CT scan and MRI is 40% and 90% respectively. The positive predictive value of CT scan and MRI is 90% and 98% respectively. The negative predictive value of CT scan and MRI is 25% and 69% respectively. Diagnostic accuracy of CT scan and MRI in detecting HCC is 76% and 93% respectively. From the result, it showed that CT scan and MRI have higher sensitivity in detecting HCC. However, result was found MRI is more sensitive in detecting small HCC lesion less than 2 cm.

**Conclusion:** CT scan and MRI show similar diagnostic performance for the detection of HCC. However, the advancement in MRI technologies and use of gadoxetix acid-enhanced MRI improve the sensitivity in the detection of HCC lesion less than 2 cm in diameter.

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